



STATE OF WASHINGTON
STATE BUILDING CODE COUNCIL

Washington State Energy Code Development
Standard Energy Code Proposal Form

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Code being amended: ☐ Commercial Provisions ☐ Residential Provisions

Code Section # Table C405.4.2(2) footnotes / C405.2.2.1 Additional interior lighting power.

Brief Description:

~~Eliminate Table C405.4.2.2.1 Additional interior lighting power footnotes c. and n. in exchange for language more consistent with ASHRAE 90.1 2019.~~

Eliminate superfluous language in code, correct typos, and clarify allowances for display and lighting for specific use as ornamentation.

Proposed code change text: (Copy the existing text from the Integrated Draft, linked above, and then use underline for new text and ~~strikeout~~ for text to be deleted.)

Table C405.4.2(2) INTERIOR LIGHTING POWER ALLOWANCES: SPACE-BY-SPACE METHOD

TABLE C405.4.2(2)
INTERIOR LIGHTING POWER ALLOWANCES: SPACE-BY-SPACE METHOD

COMMON SPACE-BY-SPACE TYPES ^a	LPD (w/ft ²)	COMMON SPACE-BY-SPACE TYPES ^a	LPD (w/ft ²)
Atrium - Less than 20 feet in height	0.39	Guest room ^{a,b}	0.41
Atrium – 20 to 40 feet in height	0.48	Laboratory	
Atrium - Above 40 feet in height	0.60	In or as a classrooms	1.11
Audience/seating area - Permanent ⁿ		Otherwise	1.33
In an auditorium	0.61	Laundry/washing area	0.53
In a gymnasium	0.23	Loading dock, interior	0.88
In an motion picture theater	0.27	Lobby ^c	
In a penitentiary	0.67	In a facility for the visually impaired (and not used primarily by the staff) ^b	1.69
In an performing arts theater	1.16	For an elevator	0.65
In a religious building	0.72	In a hotel	0.51
In a sports arena	0.33	In a motion picture theater	0.23
Otherwise	0.23	In a performing arts theater	1.25
Banking activity area	0.61	Otherwise	0.84
Breakroom (see Lounge/breakroom)		Locker room	0.52
Classroom/lecture hall/training room		Lounge /breakroom ⁿ	
In a penitentiary	0.89	In a health care facility	0.42
Otherwise ^m	0.71	Otherwise	0.59
Computer room, data center	0.94	Office	
Conference/meeting/multipurpose	0.97	Enclosed ≤ 250	0.74
Confinement cell	0.70	Enclosed >250	0.66
Copy/print room	0.31	Open plan	0.61
Corridor		Parking area, interior	0.15
In a facility for the visually impaired (and not used primarily by the staff) ^b	0.71	Pharmacy area	1.66
In a hospital	0.71	Restroom	
In a manufacturing facility	0.41	In a facility for the visually impaired (and not used primarily by the staff) ^b	1.26
Otherwise ^{c,n}	0.41	Otherwise ⁿ	0.63
Courtroom ^c	1.20	Sales area	1.05
Dining area		Seating area, general	0.23
In a penitentiary	0.42	Stairway (See space containing stairway)	
In a facility for the visually impaired (and not used primarily by the staff) ^b	1.27	Stairwell ⁿ	0.49
In a bar/lounge or leisure dining ⁿ	0.86	Storage room	
In cafeteria or fast food dining	0.40	< 50 ft ²	0.51
In a family dining area ⁿ	0.60	50-100 ft ²	0.38
Otherwise	0.43	All other storage	0.38
Electrical/mechanical	0.43	Vehicular maintenance	0.60
Emergency vehicle garage	0.52	Workshop	1.26
Food preparation	1.09		

TABLE C405.4.2(2) (continued)
INTERIOR LIGHTING POWER ALLOWANCES: SPACE-BY-SPACE METHOD

BUILDING SPECIFIC SPACE-BY-SPACE TYPES ^a	LPD (w/ft ²)	BUILDING SPECIFIC SPACE-BY-SPACE TYPES ^a	LPD (w/ft ²)
Automotive	0.60	Performing arts theater dressing/fitting room	0.41
Convention center - Exhibit space ^h	0.61	Post office—Sorting area	0.71
Dormitory living quarters ^{a,b}	0.50	Religious building	
Facility for the visually impaired ^b		In a fellowship hall ⁿ	0.54
In a chapel (and not used primarily by the staff)	0.70	In a worship pulpit/choir area ⁿ	0.85
In a recreation room (and not used primarily by the staff)	1.77	Retail	
Fire stations ^h		In a dressing/fitting room	0.51
		In a mall concourse	0.82
Sleeping quarters	0.23	Sports arena—Playing area	
Gymnasium/fitness center		For a Class 1 facility ⁱ	2.94
In an exercise area	0.90	For a Class 2 facility ⁱ	2.01
In a playing area	0.85	For a Class 3 facility ^k	1.30
Health care facility ^{h,m}		For a Class 4 facility ^l	0.86
In an exam/treatment room	1.40	Transportation ^h	
In an imaging room	0.94	In a baggage/carousel area	0.39
In a medical supply room	0.62	In an airport concourse	0.25
In a nursery	0.92	At a terminal ticket counter ^a	0.51
In a nurse's station	1.17	Warehouse—Storage area	
In an operating room	2.26	For medium to bulky palletized items	0.33
In a patient room ^q	0.68	For smaller, hand-carried items	0.69
In a physical therapy room	0.91		
In a recovery room	1.25		
Library ^h			
In a reading area ⁿ	0.96		
In the stacks	1.10		
Manufacturing facility			
In a detailed manufacturing area	0.80		
In an equipment room	0.76		
In an extra high bay area (> 50-foot floor-ceiling height)	1.42		
BUILDING SPECIFIC SPACE-BY-SPACE TYPES^a	LPD (w/ft²)		
In a high bay area (25 - 50-foot floor-ceiling height)	1.24		
In a low bay area (< 25-foot floor-ceiling height)	0.86		
Museum			
In a general exhibition area ^h	0.31		
In a restoration room	1.10		

Commented [BK(1)]: From CJ: Footnote doesn't go to anything

Commented [BK(2)]: From CJ: Footnote doesn't go to anything

c. ~~For spaces in which lighting is specified to be installed in addition to, and controlled separately from, the general lighting. Additional lighting power allowance of 0.2 watts per square foot for the purpose of highlighting art or exhibits, provided that the additional lighting power shall not exceed 0.2 W/square foot of such spaces. This additional power shall be permitted only where the specified lighting is installed in addition to and controlled separately from general lighting in accordance with Section C405.2.6. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose and it shall not be added to any other space or the interior power allowance.~~

n. ~~Additional lighting power allowance of 0.15 ~~W~~ watts per square foot for ornamental lighting. Qualifying ornamental lighting includes luminaires that are specifically used in a decorative manner, that does not serve as display lighting or general lighting. This additional power shall be permitted only where the specified lighting is installed in addition to and controlled separately from display or general lighting in accordance with Section C405.2.6. This additional power shall be used only for the specified luminaires and it shall not be added to any other space or the interior power allowance.~~

C405.4.2.2.1 Additional interior lighting power. Where using the Space-by-Space Method, an increase in the interior lighting power allowance is permitted for specific lighting functions. Additional power shall be permitted only where the specified lighting is installed and automatically controlled separately from the *general lighting*, ~~to be turned off during nonbusiness hours and controlled~~ in accordance with Section C405.2.6. This additional power shall be used only for the specified luminaires and shall not be used for any other purpose. [Insert carriage return]

An increase in the interior lighting power allowance is permitted for lighting equipment to be installed in sales areas specifically to highlight merchandise. The additional lighting power shall be determined in accordance with Equation 4-11:

$$\text{Additional interior lighting power allowance} = 500 \text{ watts} + (\text{Retail Area 1} \times 0.45 \text{ W/ft}^2) + (\text{Retail Area 2} \times 0.45 \text{ W/ft}^2) + (\text{Retail Area 3} \times 1.05 \text{ W/ft}^2) + (\text{Retail Area 4} \times 1.87 \text{ W/ft}^2)$$

(Equation 4-11)

Where:

- Retail Area 1 = The floor area for all products not listed in Retail Area 2, 3 or 4.
- Retail Area 2 = The floor area used for the sale of vehicles, sporting goods and small electronics.
- Retail Area 3 = The floor area used for the sale of furniture, clothing, cosmetics and artwork.
- Retail Area 4 = The floor area used for the sale of jewelry, crystal and china.

Exception: Other merchandise categories are permitted to be included in Retail Areas 2 through 4, provided that justification documenting the need for additional lighting power based on visual inspection, contrast, or other critical display is *approved* by the *code official*.

Purpose of code change:

This Code Change Proposal amends the current code so that Washington State more closely matches ASHRAE-90.1 2019, without the specific addition of 0.75W/ft².

An increase in the *interior lighting power allowance* is permitted in the following cases:

- a. For each *space* in which lighting is specified to be installed in addition to the *general lighting* for the purpose of decorative appearance or for highlighting art or exhibits not exempted in Table 9.2.3.1, Item 11, provided that the additional lighting power shall not exceed 0.75 W/ft² of such *spaces*.

As a reminder General Lighting in the Integrated Draft is now defined as:

GENERAL LIGHTING. Interior lighting that provides a substantially uniform level of illumination throughout ~~an~~
~~area~~ space. General lighting shall not include lighting that provides a dissimilar level of illumination to
serve a specific application or decorative feature within such area.

Artwork illumination (display lighting) and lighting integrated within art (ornamental lighting) should be encouraged for the purpose of spatial definition, improved human experience, and general well-being. When applied selectively, as it most often is, display and ornamentation lighting has the potential to reduce the power consumption of general lighting surrounding it based on the needs of visual balance and implied hierarchy.

The problem with the code as written is that more space types in the Table C405.4.2(2) warrant the use of current footnotes c. (Display) and n. (Ornamental) lighting, e.g. primary stairways, tenant improvement open office areas, libraries at large (not just the reading room), in many health care facility areas, transportation areas, etc. The selection of pertinent areas can be subjectively interpreted, as can the difference between the lighting of artwork and lighting being the actual artwork.

Additionally, no mention of circadian stimulus lighting is mentioned in the code, a treatment in many commercial spaces now which doubles the connected load of the specific luminaire. Sometimes this lighting is the *general lighting*, and as such warrants different code language. A listing at 50% connected load will be comparable to static color temperature equivalent optical distribution luminaires.

~~The other benefit of this change is a reduction in code form complexity. The process for which information is entered into the form is burdensome when listed by space type. A blanket approach will allow for code form ease of use. Luminaires can be listed by type if they satisfy Additional Interior Lighting Power criteria a. or c. and tallied relative to the "Allowed Watts" total. No change is proposed to criteria b.~~

Your amendment must meet one of the following criteria. Select at least one:

- | | |
|---|--|
| <input type="checkbox"/> Addresses a critical life/safety need. | <input checked="" type="checkbox"/> Consistency with state or federal regulations. |
| <input checked="" type="checkbox"/> The amendment clarifies the intent or application of the code. | <input type="checkbox"/> Addresses a unique character of the state. |
| <input type="checkbox"/> Addresses a specific state policy or statute.
(Note that energy conservation is a state policy) | <input checked="" type="checkbox"/> Corrects errors and omissions. |

Check the building types that would be impacted by your code change:

- | | | |
|--|---|---|
| <input type="checkbox"/> Single family/duplex/townhome | <input type="checkbox"/> Multi-family 4 + stories | <input checked="" type="checkbox"/> Institutional |
| <input type="checkbox"/> Multi-family 1 – 3 stories | <input checked="" type="checkbox"/> Commercial / Retail | <input type="checkbox"/> Industrial |

Your name CJ Brockway, IALD, MIES Email address cj@sparklabLD.com

Your organization SparkLab Lighting Design, LLC Phone number 206.251.8117

Other contact name [Click here to enter text.](#)

Instructions: Send this form as an email attachment, along with any other documentation available, to: sbcc@des.wa.gov. For further information, call the State Building Code Council at 360-407-9278.

Economic Impact Data Sheet

Briefly summarize your proposal's primary economic impacts and benefits to building owners, tenants and businesses.

Provide your best estimate of the construction cost (or cost savings) of your code change proposal? (See OFM Life Cycle Cost [Analysis tool](#) and [Instructions](#); use these [Inputs](#). **Webinars on the tool can be found [Here](#) and [Here](#)**)

\$[Click here to enter text.](#)/square foot (For residential projects, also provide \$[Click here to enter text.](#)/ dwelling unit)

Show calculations here, and list sources for costs/savings, or attach backup data pages

Provide your best estimate of the annual energy savings (or additional energy use) for your code change proposal?

[Click here to enter text.](#)KWH/ square foot (or) [Click here to enter text.](#)KBTU/ square foot

(For residential projects, also provide [Click here to enter text.](#)KWH/KBTU / dwelling unit)

Show calculations here, and list sources for energy savings estimates, or attach backup data pages

List any code enforcement time for additional plan review or inspections that your proposal will require, in hours per permit application:

All questions must be answered to be considered complete. Incomplete proposals will not be accepted.